Name: _____ Date: _____ Mrs. Ellis

Motion WS #3

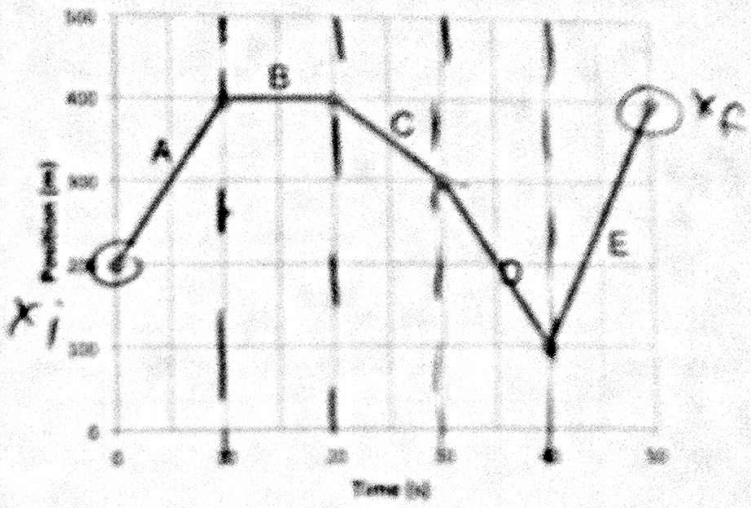
Use the position vs. time graph of a dog walking down a street to answer the following questions.

1. What is the **displacement** after each **10 second time interval**?

A: +200m (↑) D: −200m (↓)

B: 0m E: +300m (↑)

C: −100m (↓)



2. What is the **total distance** traveled by the dog? **Show all work.**

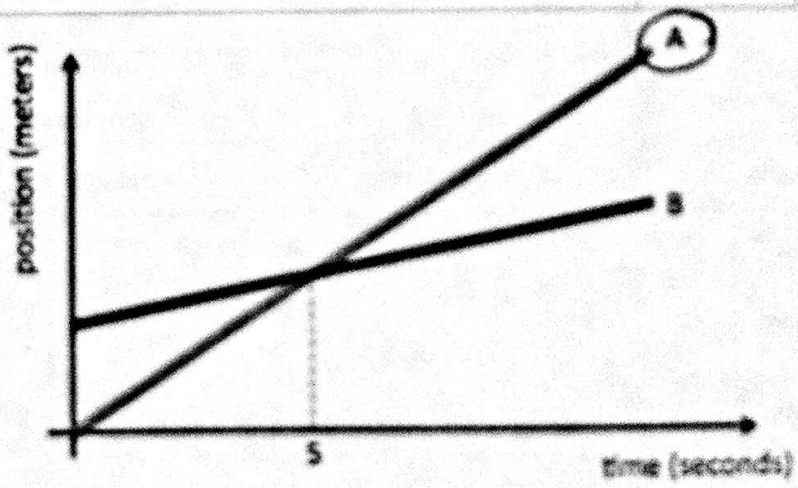
d = 800m

200 + 0 + 100 + 200 + 300 =

3. What is the **total displacement** of the dog? Show all work

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$\Delta x = x_f - x_i$	$x_f = 400$ $x_i = 200$	$\Delta x = 400 - 200$	+200m (AWAY)

Consider the position vs. time graph below that represents the motion of two bicyclists.



4. Circle the letter of the cyclists that is faster.

5. Do the cyclists start at the same point? If not, which one starts ahead? How do you know?

B STARTS AHEAD, AT TIME = 0S ITS POSITION ON Y-AXIS IS HIGHER

6. At t = 7.00 s, which cyclists is ahead? How do you know?

A BECAUSE ITS POSITION IS FARTHER AWAY FROM THE ORIGIN

7. What is happening at the intersections of lines A and B?

THE CYCLISTS ARE AT THE SAME POSITION

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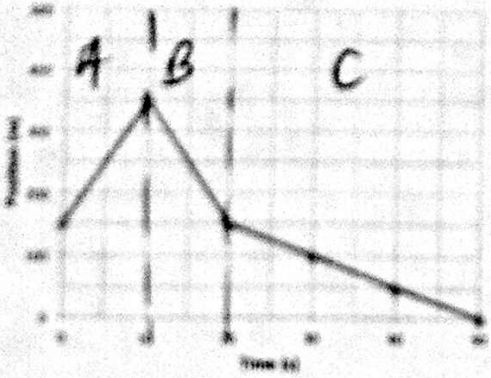
8. Write a **description** of the motion that you see in each position vs. time graph. Then determine the total **distance and the total displacement. Show all work.**



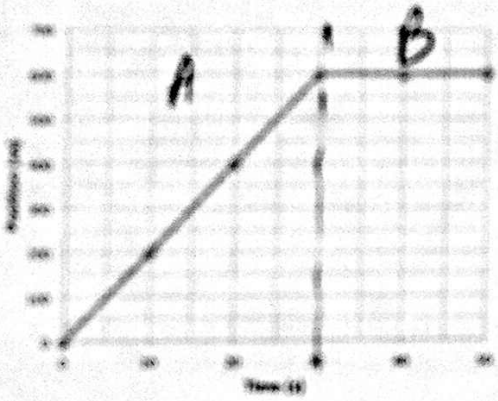
Description: A → AWAY @ C.R.
B → TOWARDS @ SAME C.R.
C → TOWARDS @ SLOWER C.R.

150 - 350 = 200
350 - 150 = 200
150 - 0 = 150

Total Distance: 550 m

Displacement:

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$X_i = 150$ $X_f = 0$	ΔX $X_f - X_i$	0 - 150	-150m (TOWARD)



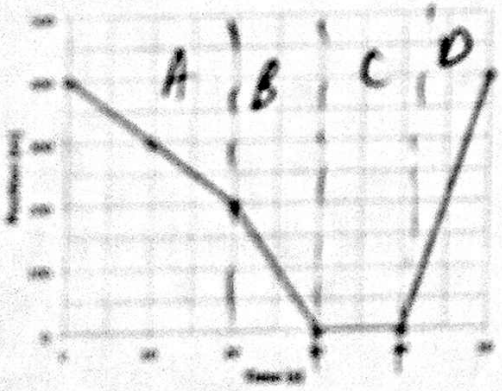
Description: A → CR. AWAY
B → AT REST

0 - 600 = 600m
600 - 600 = 0m

Total Distance: 600m

Total Displacement:

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$X_i = 0$ $X_f = 600$	$X_f - X_i$	600 - 0	+600m (AWAY)



Description: A → TOWARD @ C.R.
B → TOWARD @ FASTER C.R.
C → AT REST
D → AWAY @ EVEN FASTER C.R.

Total Distance: 800m

200
+ 200
+ 0
+ 400
800

Total Displacement:

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$X_i = 400$ $X_f = 400$	$\Delta X =$ $X_f - X_i$	400 - 400	$\Delta X =$ 0m